

WHAT IS CLAIMED IS:

1. A data demodulating method comprising the steps of:  
5 demodulating predetermined input data based upon a response characteristic of the partial response class 4; discrete-filtering said demodulated input data to thereby produce filtering data; and

maximum-likelihood-decoding said filtering data to  
10 thereby producing asymmetrical response data.

2. A data demodulating method as claimed in claim 1  
15 wherein:  
said discrete-filtering step is a phase filtering step to produce a minimum phase transition waveform.

3. A data demodulating method as claimed in claim 1  
20 wherein: said discrete-filtering step produces an asymmetrical response of an integer coefficient.

4. A data demodulating method as claimed in claim 3  
30 wherein: said integer coefficient causes a response of a data stream to become such a response having an integer coefficient that a value obtained by dividing a distance between signals by a temporal relative product of noise power and noise becomes maximum.

5. A data demodulating method as claimed in claim 1  
35

wherein: the demodulation data is applied to the EEPRL system, and a single pulse response of a preselected

integer coefficient is a ratio of normalized signal values as to any one set of (5, 4, -3, -4, -2), (2, 2, -1, -2, 1), and (3, 2, -2, -2, -1).

6. A data demodulating method as claimed in claim 1 wherein: the demodulation data is applied to the EEPRL system, and a single pulse response of a preselected integer coefficient is a ratio of normalized signal values as to any one set of (2, 5, 1, -3, -2, -2), and (2, 4, 0, -3, -2).

7. A data demodulating method as claimed in claim 1, further comprising:  
a step for combining with any one of a 1-bit consecutive error and a 3-bit continuous error with respect to a code-error correction code.

8. A data demodulating apparatus comprising: processing means for processing a predetermined input data stream based upon the partial response class 4; a discrete time filter for discrete-filtering the output of said processing means;

a maximum likelihood decoder for maximum likelihood-decoding the output of said discrete time filter to thereby execute data discrimination; and

demodulating means for demodulating the output of said

maximum likelihood decoder.

9. A data demodulating apparatus as claimed in claim 8 wherein: both said discrete time filter and said maximum likelihood decoder are arranged by a maximum likelihood decoder of the partial response class 4.

10. A data demodulating apparatus as claimed in Claim 8 wherein: said discrete time filter is constituted by an analog filter for changing the output of said processing means into a response to a minimum phase transition condition.

11. A data demodulating apparatus as claimed in claim 8 wherein: said discrete time filter is constituted by a digital filter for converting the output of said processing means into an asymmetrical response of an integer coefficient.

12. A data demodulating apparatus as claimed in Claim 13 wherein: said digital filter selects an integer value in such a manner that a response to a data stream becomes a response of an integer series such that a value obtained by dividing a distance between signals by a temporal relative product between noise power and noise becomes maximum.

13. A data demodulating apparatus as claimed in Claim 12 wherein: the demodulation data is applied to the

EEPRML system, and a single pulse response of a preselected integer coefficient is a ratio of normalized signal values as to any one set of (5, 4, -3, -4, -2), (2, 2, -1, -2, -1), and (3, 2, -2, -2, -1).

14. A data demodulating apparatus as claimed in Claim 12 wherein: the demodulation data is applied to the EEPRML system, and a single pulse response of a preselected integer coefficient is a ratio of normalized signal values as to any one set of (2, 5, 1, -3, -3, -2), and (2, 4, 0, 3, -2).

15. In a magnetic recording/reproducing apparatus for recording/reproducing an input data stream, the data reproducing apparatus as described in claim 8 is provided in a reproducing system.

16. A magnetic recording/reproducing apparatus as claimed in claim 15, further comprising:  
an external register connected to said discrete

time filter, for setting a coefficient of said discrete time filter.